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Watershed Protection: A Project Focus
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Chapter 1: The Watershed Protection Approach — Defining a Project Focus

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What is the Watershed Protection Approach?

The Watershed Protection Approach (WPA) describes efforts within the U.S. Environmental Protection Agency (EPA) and other federal, state and local agencies to use a watershed-oriented approach to meeting water quality goals. The WPA is a comprehensive approach that takes into account all threats to human health and ecological integrity within specific watersheds. To some extent, this approach requires a departure from EPA's traditional focus on regulating specific pollutants and pollutant sources and instead encourages integration of traditional regulatory and nonregulatory programs to support natural resource management. Based on the success of comprehensive, aquatic ecosystem-based programs such as the Chesapeake Bay, Great Lakes, Clean Lakes, and National Estuary Programs, the EPA Office of Water is promoting similar approaches across the Nation in watersheds large and small, freshwater and marine, urban and rural.

The WPA can be described in many ways. For purposes of this document, the WPA is based on four key elements, listed below and described more fully in Figure 1-1:

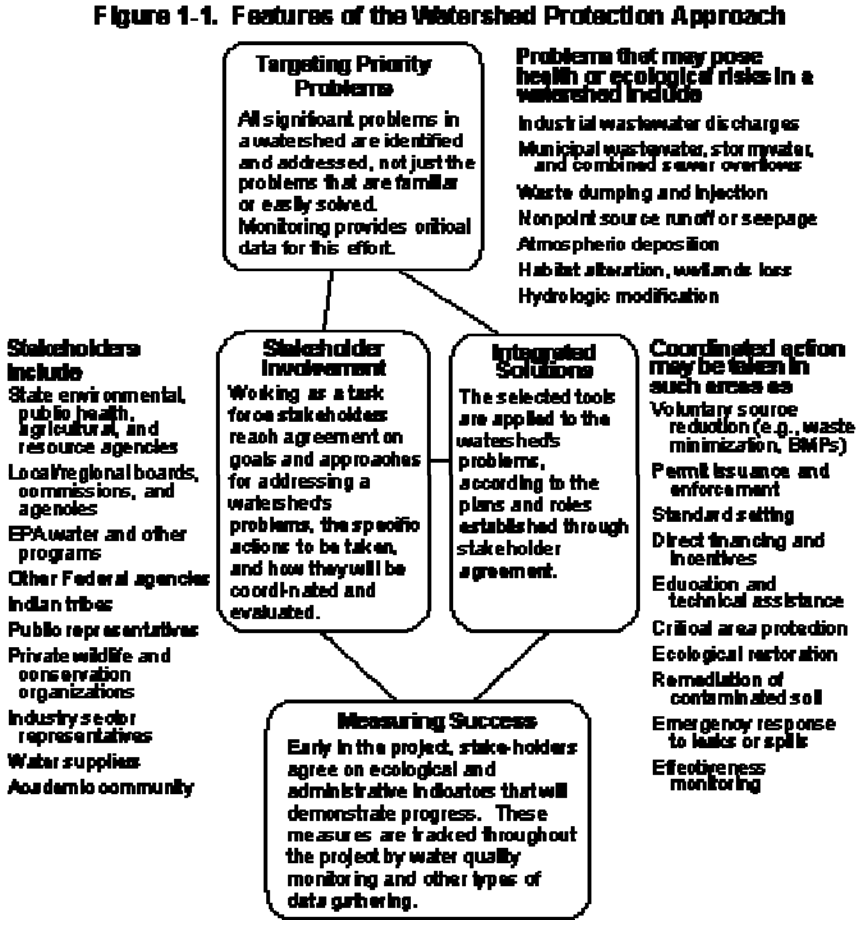
All priority problems in a watershed should be identified and addressed—problems posing the greatest risk to human health, ecological resources, desirable uses of the water, or a combination of these

All parties with a stake or interest in a specific watershed should participate in the analysis of problems and the creation and implementation of solutions

Actions taken in a watershed should draw on the full range of methods and tools available, integrating them into a coordinated, multi-organizational attack on the problems

Stakeholders should agree on measures of success early and monitor progress throughout the life of the project.

Figure 1. Features of the Watershed Protection Approach



The WPA helps to create water quality programs that have the following characteristics:

Feature watersheds or basins as the basic management units

Target priority watersheds for management action

Address all significant point and nonpoint sources

Address all significant pollutants or stressors

Set clear and achievable goals

Involve stakeholders during all stages of the program

Use the resources and expertise of multiple agencies

Are not limited by any single agency's responsibilities

Consider public health issues

Consider all aspects of ecosystem health including habitat

WPA projects also feature a strong monitoring and evaluation component. Using monitoring data, stakeholders identify stressors that may pose health and ecological risk in the watershed and any related aquifers, and prioritize these stressors. Monitoring is also essential to determining the effectiveness of management options chosen by stakeholders to address high-priority stressors. Because many watershed protection activities require long-term commitments from stakeholders, stakeholders need to know whether their efforts are achieving real improvements in water quality.

In addition, WPA projects must be consistent with state regulatory programs such as development of total maximum daily loads (TMDLs) and basinwide water quality assessments. In fact, a watershed may be selected for a special project because of the need for a complex TMDL involving point and nonpoint sources.

The appropriate scale for watershed projects is discussed in Chapter 2. In general, watershed projects under the WPA should be larger than demonstration size and should result in water quality improvement in significant, high priority water bodies. Most states delineate from 100 to 500 watersheds for planning purposes. The cover of this report depicts a river basin and one of its watersheds that might be selected for a watershed project.

What is the Relationship Between Individual Watershed Projects and Statewide Watershed Protection?

This document focuses on individual watershed projects, which can be components of the statewide watershed protection approach that many state water quality programs use. These states have organized their traditional activities, such as permitting, planning, and monitoring, so that all water quality problems are dealt with in the context of very large drainage areas (river basins). Typically, each basin is studied, and a basin plan developed, on a 5-year cycle.

A companion document, *Watershed Protection: A Statewide Approach* (EPA 1995) discusses how the principles of the WPA can be applied on larger geographic scales (i.e., statewide and basinwide) in ongoing state water quality programs.

There is merit in both concepts—focusing on individual watershed projects and the organization of state programs for statewide watershed management. States select their approaches to pollution control based on past history and other factors such as the

willingness and resources of local governments to contribute to a statewide approach versus an individual watershed project approach. For example, solving a state's water quality problems through many individual watershed projects may require greater local interest and resources than currently exist. The statewide approach may be more suitable and may help build a case for local action at the watershed level. In some cases, individual watershed projects may be used as examples to test the general concepts of watershed management or to give special attention to particularly difficult water quality problems.

The two approaches are compatible. For example, individual watershed projects can supply critical information to a state's basin plans as new models are developed and new watershed-level management approaches are tested.

How Does the WPA Differ from Other Watershed Initiatives?

Watershed-based projects are not new—hundreds of projects are ongoing at the federal, state and local levels. These projects usually have a specific slant or focus, as shown in Table 1-1. WPA seeks to build on previous watershed efforts; what is different is EPA's adoption of WPA as an operational approach. The EPA Office of Water is encouraging water quality agencies to orient their programs toward watersheds as management units and to begin comprehensive control projects in targeted watersheds.

Table 1. Examples of Types of Watershed Projects

Category of Project	Legislation or Other Authorization	Focus
Nonpoint Source Targeted Watershed Projects	CWA Section 319	Grants for small watershed demonstrations provided through Section 319(h) grants, with states encouraged to take advantage of U.S. Department of Agriculture Hydrologic Unit Area (HUA) projects or other large watershed-scale initiatives.
Clean Lakes Protection/Restoration Projects	CWA Section 314	Lake protection and restoration. Source of many techniques relevant to holistic watershed management emphasizing grassroots stakeholder involvement. Most projects focus

		on small lakes and reservoirs.
Great Lakes Remedial Action Plans	Treaty agreements with Canada, 1987 CWA and Amendments in Omnibus Water Resources Act of 1990.	Development of water quality-based restoration programs for Areas of Concern, usually to address toxicant problems on riverine estuaries.
U.S. Department of Agriculture (USDA) Hydrologic Unit Area (HUA) Projects	President's Water Quality Initiative and the Farm Bill Conservation Title	Provides for water quality-oriented USDA technical assistance and cost-sharing in selected special watershed units with documented surface or groundwater concerns related to agricultural practices.
USDA Forest Stewardship Incentives Program (SIP)	1992 Farm Bill, Title XII (dealing with nonindustrial private forestry)	Encourages partnership between USDA Forest Service with state forestry programs to improve management of up to 25 million acres of private woodlands and forests. Improvement can be targeted for riparian zones or wetlands.
Natural Resources Conservation Service (NRCS) Small Watershed Projects	PL-566, Upstream Flood Control and Critical Area Treatment	Encourages watershed planning to identify land treatment practices to reduce soil erosion and coastal flooding and to address other conservation needs.
USDA Demonstration Projects	President's Water Quality Initiative	Demonstrates practical technology which can be used as part of integrated resource management for water resource protection.
National Estuary Program	CWA Section 320	Promotes development of integrated management planning based on flexible regional stakeholder involvement and public outreach for 21 major estuaries and their associated

		watersheds.
U.S. Department of Interior (DOI) Bureau of Land Management (BLM) Fish and Wildlife 2000 Plan	An initiative under the BLM's riparian policies that places fish and wildlife values on an equal footing with other multiple uses of BLM leases	Starting in 1987, has led to numerous projects in western states to restore or protect riparian habitats. The recent Riparian-Wetlands initiative for the 1990s and the Bring Back the Natives Initiative are especially targeted at restoring ecological functions and protecting native fish stocks.
Corps of Engineers (COE) Environmental Enhancement Initiatives	Water Resources Development Acts of 1986 and 1990	In 1986, the Corps became a partner with the 8 States on the Upper Mississippi River in mitigating adverse ecological impacts from navigation works. Expanded in 1990 to cover all Corps projects. Examples include the Kissimmee River and the Everglades (Florida) and the Anacostia River (Maryland and the District of Columbia).
Incremental Flows Evaluations	Required by at least 15 States and relevant to Federal dam permit renewals, environmental impact work for COE and Bureau of Reclamation, and National Park Service assistance	Studies of instream flow needs in watersheds. Common in western states for operation of major dams. Also of importance elsewhere where rivers dammed for hydro-power or where issues with anadromous fisheries involved.
River Corridor Conservation Programs	Wild and Scenic Rivers Act, National Trails System Act, and Outdoor Recreation Act	In addition to the system for Wild and Scenic River designation, the National Park Service provides technical assistance to states for statewide river conservation programs or corridor protection

		projects on specific streams. Also many states or local governments have river greenbelt programs.

A number of EPA water quality programs already incorporate WPA principles to some degree (e.g., the Nonpoint Source Program, the Comprehensive State Ground Water Protection Programs, the National Estuary Program, the Clean Lakes Program, and Advanced Identification or Special Area Management Plans in the Wetlands Program). The WPA is not intended to replace any of these programs, but to further encourage a watershed orientation in them.

The WPA is not limited to EPA-sponsored programs. Indeed, one of the principal characteristics of the WPA is that it complements other environmental and natural resource management activities. The WPA, with its focus on specific water bodies, provides a way for traditional EPA and state programs to work much more closely with other agencies such as the U.S. Department of Agriculture (e.g., NRCS and the U.S. Forest Service), the U.S. Department of Interior (e.g., USGS, Bureau of Reclamation, Bureau of Land Management, and the U.S. Fish and Wildlife Service), and local and tribal governments. These working relationships are vital to the success of any WPA and, more importantly, to the restoration, maintenance, and protection of the Nation's ecosystems.

Purpose of this Document

This report is intended to promote watershed planning as envisioned under the WPA. The document describes a logical process for planning and implementing watershed projects and presents some lessons learned in previous projects.

In addition to promoting watershed-based planning, some key goals of the WPA and of this document are:

To emphasize ecological integrity in watersheds by addressing chemical, physical, biological and habitat stressors in addition to the more traditional goal of protecting human health through chemical water quality criteria

To encourage the targeting of watersheds for action, pooling resources and expertise with other government agencies and citizen groups

To encourage local agencies and citizen groups to get involved in state or federal projects or to start their own watershed projects

To help build a national base of successful watershed projects. Many of these projects will carried out under the supervision of state agencies that are also implementing other WPA-compatible programs statewide.

Audience

This document was developed to aid state, tribal, and local water quality managers in implementing watershed projects. A successful project typically involves staff from multiple agencies—federal as well as state and local—and these individuals may benefit as well. Members of environmental action groups and other informed citizens may also find this document helpful.

The Need for Partnerships and Concerted Actions

Section 101 of the Clean Water Act (CWA) establishes the physical, chemical and biological integrity of the Nation's waters as the primary goal of the national water quality program. Federal, state, tribal, and local governments, as well as industries and concerned citizens, have been working for over 20 years to achieve this goal. Their focus has been primarily on controlling the effects of municipal and industrial point source pollution through a federal permitting program (the National Pollutant Discharge Elimination System, NPDES) and a massive effort to make funds available to municipalities to construct and improve wastewater treatment plants. The success demonstrated by these efforts is a result of dedicated work and the concentration of resources, but also reflects the relative ease with which point sources can be identified and treated with existing technologies.

Nonpoint sources account for most of our remaining water quality problems. According to the 1990 and 1992 editions of the National Water Quality Inventory: Report to Congress (EPA, 1992a and 1994), the leading causes of impairment of our Nation's rivers and streams are siltation, excessive nutrients, and other pollutants from nonpoint sources. Nonpoint source pollution is generated from varied and diffuse sources—for example, runoff from farm fields carrying nutrients and pesticides, runoff from city streets carrying sediment and metals, and sediment-laden runoff from logging and construction activities. The impacts of these stressors may range from acute or chronic effects on humans and aquatic organisms to the physical degradation of aquatic habitat.

The CWA establishes a foundation of required actions that help prevent water quality impairments from point sources. These actions include technology-based controls, financial assistance, and point source permits. However, to control nonpoint sources, water quality programs must work in concert with other federal, state, tribal, and local initiatives. Examples include activities under the following programs and laws:

The President's Water Quality Initiative (USDA)

Conservation Title of the Farm Bill (the Farm Security Act of 1985 as amended)

Safe Drinking Water Act's Wellhead Protection Program

Rivers and Trails Conservation Program of the National Park Service

National Oceanic and Atmospheric Administration (NOAA) Sea Grant and the National Marine Sanctuaries Programs that support State Coastal Zone Management Programs

U.S. Fish and Wildlife Service efforts in wetlands acquisition and conservation under the Emergency Wetlands Resources Act of 1986

Bureau of Land Management and Forest Service initiatives to protect or rehabilitate watersheds on public lands and in national forests.

The benefits of watershed projects will usually be enhanced through a mix of many agencies' approaches, statutory authorities, and resources. Such a mix promotes the use of ecological principles and takes into account socioeconomic factors (e.g., through training and cost-sharing) to develop controls. EPA's Watershed Protection Approach emphasizes coordination among programs to achieve water quality goals.

Highlight 1 describes some major features of the Clean Water Act (CWA) that are relevant to a watershed-based approach to water quality management.

Highlight 1

Features of the CWA Relevant to Watershed Planning

Water Quality Standards. Water quality standards are the driving force behind State water quality programs. Water quality standards consist of three elements: the beneficial designated use(s) of a water body (e.g., fishing and swimming), the water quality criteria necessary to protect the use(s) of the water body (these can be numeric or narrative), and an antidegradation policy to maintain and protect existing uses and water quality. One goal of any watershed management plan is the ultimate attainment of water quality standards.

Wastewater Treatment Plant Construction Grants Program and State Revolving Funds. Since 1972, the federal government has provided billions of dollars in grants to states and local communities for the construction of sewage treatment systems. This program, in concert with the NPDES permitting program, has greatly reduced point source loadings to our Nation's surface waters. The 1987 Amendments of the CWA moved the responsibility for financing municipal treatment systems from the federal government to the states and local communities. Seed money was provided to establish state revolving [loan] funds (SRF) that are designed to become self-sustaining. If a state can first satisfy its sewage treatment construction needs, then revolving funds may be used for other activities including nonpoint source activities that are in accordance with Section 319 of the CWA. Thus, watershed projects may be eligible for SRF funding in certain cases.

National Pollutant Discharge Elimination System (NPDES). The NPDES system requires that each point source of wastewater (industrial and municipal) obtain a permit that regulates the facility's discharge of pollutants into U.S. waters. The CWA requires that point source dischargers comply with specified effluent limitations for conventional and nonconventional pollutants and priority toxic pollutants. The 1987 Amendments added Section 304(l) to place a special emphasis on the identification and control of waters that remain impaired by toxic pollutants even after the application of technology-based requirements. Of particular relevance to the WPA, EPA has recently developed an NPDES Watershed Strategy to integrate the NPDES program into each state's WPA.

Total Maximum Daily Loads (TMDLs). The CWA [Section 303(d)] requires that TMDLs be established for water bodies where water quality standards have not been met through technology-based effluent limitations alone. A TMDL can be defined as the sum of the "wasteload allocation" for point sources and the "load allocation" for nonpoint sources that a water body can assimilate and still meet water quality standards. The TMDL must also include a margin of safety, which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.

The TMDL process, as described in Guidance for Water Quality-based Decisions: The TMDL Process (EPA, 1991a), consists of five steps: (1) identification of water quality-limited waters; (2) priority ranking and targeting; (3) TMDL development; (4) implementation of control actions; and (5) assessment of water quality-based control actions.

Most TMDLs do not involve the extensive planning, interagency coordination, and public participation described in this WPA document. However, some watersheds may be selected for WPA-type projects because of the need for TMDLs. For example, a watershed project may be appropriate in a complex situation where point and nonpoint sources are degrading a high priority lake, estuary or aquifer and local interest is high.

Clean Lakes Program. Section 314 of the CWA established a program for identifying publicly owned lakes in each state that are impaired by point and nonpoint sources and by such stressors as nutrients, metals, and acidity. Clean Lakes Grants are issued for diagnostic/feasibility studies, restoration/implementation projects, and post-restoration monitoring programs. From its inception in 1972, the Clean Lakes Program has had a watershed focus and has encouraged coordination among federal, state, and local agencies and grass-roots organizations. Building the institutional framework that involves all stakeholders is a major objective of Section 314. Over time, many states have developed the local support, legislation, and funding sources for self-sustaining lake programs.

Nonpoint Source Programs. Section 319 of the 1987 CWA amendments created a new program designed to control nonpoint source pollution and to protect groundwater as part of the overall effort. In general, this section requires each state to submit an assessment of state waters not expected to meet water quality standards because of nonpoint source pollution and a management program for controlling nonpoint source pollution.

Many watershed projects are sponsored under Section 319 grants. These projects range in size from small demonstration projects to full-scale watershed projects as envisioned under WPA.

Groundwater Protection. The CWA encourages steps to ensure that surface water programs do not achieve loading reductions at the expense of groundwater resources. For example, Section 319 nonpoint source management programs must demonstrate that their water quality best management practices (BMPs) are at least pollution neutral in terms of their impacts to groundwater. EPA has also worked with states to develop Groundwater Protection Strategies that coordinate the efforts of diverse federal programs. State Wellhead Protection Programs encouraged under the Safe Drinking Water Act also make use of pertinent CWA programs. Where states have adopted one or more of these approaches to groundwater protection, such tools as the TMDL process or the WPA may be useful in pursuing their groundwater objectives.

National Estuary Program (NEP). CWA Section 320 established the NEP to protect and restore the water quality and living resources of the Nation's estuaries. The NEP adopts a watershed approach by planning and implementing water quality management activities for an estuary and its entire drainage area. The Program has supported over 20 estuary projects. When an estuary is selected, EPA convenes a management conference with stakeholders from all interested groups (e.g., industry, agriculture, conservation organizations and state agencies) to more fully characterize the estuary's problems and seek solutions. The NEP is a national demonstration program in that only a fraction of U.S. estuaries can be targeted for action under NEP.